

AL.1.1.1368
C.2

Land Information Services Division

CANADIANA

FEB 22 1993

Land Information Services Division

Annual Report

1991-92



Alberta

FORESTRY, LANDS
AND WILDLIFE
Land Information Services



LAND INFORMATION SERVICES DIVISION

ANNUAL REPORT 1991-92

Table of Contents

EXECUTIVE SUMMARY.....	1	WORKSOURCE INFORMATION SERVICES.....	11
1.1 Our Mission.....	1	1.1 Natural Resources Information Systems.....	11
1.2 Our Mission.....	1	1.2 Development and Support.....	11
1.3 Our Mission.....	1	1.3 Natural Resources Information Management.....	11
1.4 Our Mission.....	1	1.4 Inventory.....	11
1.5 Our Mission.....	1	1.5 Natural Information.....	11
1.6 Our Mission.....	1	1.6 Natural Resources Information.....	11
1.7 Our Mission.....	1	1.7 Mapping and Graphics.....	11
1.8 Our Mission.....	1	1.8 Related Information Systems.....	11
1.9 Our Mission.....	1	1.9 Data Base.....	11
1.10 Our Mission.....	1	1.10 Distribution Services.....	11
1.11 Our Mission.....	1	1.11 Data Base.....	11
1.12 Our Mission.....	1	1.12 Data Base.....	11
1.13 Our Mission.....	1	1.13 Data Base.....	11
1.14 Our Mission.....	1	1.14 Data Base.....	11
1.15 Our Mission.....	1	1.15 Data Base.....	11
1.16 Our Mission.....	1	1.16 Data Base.....	11
1.17 Our Mission.....	1	1.17 Data Base.....	11
1.18 Our Mission.....	1	1.18 Data Base.....	11
1.19 Our Mission.....	1	1.19 Data Base.....	11
1.20 Our Mission.....	1	1.20 Data Base.....	11
1.21 Our Mission.....	1	1.21 Data Base.....	11
1.22 Our Mission.....	1	1.22 Data Base.....	11
1.23 Our Mission.....	1	1.23 Data Base.....	11
1.24 Our Mission.....	1	1.24 Data Base.....	11
1.25 Our Mission.....	1	1.25 Data Base.....	11
1.26 Our Mission.....	1	1.26 Data Base.....	11
1.27 Our Mission.....	1	1.27 Data Base.....	11
1.28 Our Mission.....	1	1.28 Data Base.....	11
1.29 Our Mission.....	1	1.29 Data Base.....	11
1.30 Our Mission.....	1	1.30 Data Base.....	11
1.31 Our Mission.....	1	1.31 Data Base.....	11
1.32 Our Mission.....	1	1.32 Data Base.....	11
1.33 Our Mission.....	1	1.33 Data Base.....	11
1.34 Our Mission.....	1	1.34 Data Base.....	11
1.35 Our Mission.....	1	1.35 Data Base.....	11
1.36 Our Mission.....	1	1.36 Data Base.....	11
1.37 Our Mission.....	1	1.37 Data Base.....	11
1.38 Our Mission.....	1	1.38 Data Base.....	11
1.39 Our Mission.....	1	1.39 Data Base.....	11
1.40 Our Mission.....	1	1.40 Data Base.....	11
1.41 Our Mission.....	1	1.41 Data Base.....	11
1.42 Our Mission.....	1	1.42 Data Base.....	11
1.43 Our Mission.....	1	1.43 Data Base.....	11
1.44 Our Mission.....	1	1.44 Data Base.....	11
1.45 Our Mission.....	1	1.45 Data Base.....	11
1.46 Our Mission.....	1	1.46 Data Base.....	11
1.47 Our Mission.....	1	1.47 Data Base.....	11
1.48 Our Mission.....	1	1.48 Data Base.....	11
1.49 Our Mission.....	1	1.49 Data Base.....	11
1.50 Our Mission.....	1	1.50 Data Base.....	11
1.51 Our Mission.....	1	1.51 Data Base.....	11
1.52 Our Mission.....	1	1.52 Data Base.....	11
1.53 Our Mission.....	1	1.53 Data Base.....	11
1.54 Our Mission.....	1	1.54 Data Base.....	11
1.55 Our Mission.....	1	1.55 Data Base.....	11
1.56 Our Mission.....	1	1.56 Data Base.....	11
1.57 Our Mission.....	1	1.57 Data Base.....	11
1.58 Our Mission.....	1	1.58 Data Base.....	11
1.59 Our Mission.....	1	1.59 Data Base.....	11
1.60 Our Mission.....	1	1.60 Data Base.....	11
1.61 Our Mission.....	1	1.61 Data Base.....	11
1.62 Our Mission.....	1	1.62 Data Base.....	11
1.63 Our Mission.....	1	1.63 Data Base.....	11
1.64 Our Mission.....	1	1.64 Data Base.....	11
1.65 Our Mission.....	1	1.65 Data Base.....	11
1.66 Our Mission.....	1	1.66 Data Base.....	11
1.67 Our Mission.....	1	1.67 Data Base.....	11
1.68 Our Mission.....	1	1.68 Data Base.....	11
1.69 Our Mission.....	1	1.69 Data Base.....	11
1.70 Our Mission.....	1	1.70 Data Base.....	11
1.71 Our Mission.....	1	1.71 Data Base.....	11
1.72 Our Mission.....	1	1.72 Data Base.....	11
1.73 Our Mission.....	1	1.73 Data Base.....	11
1.74 Our Mission.....	1	1.74 Data Base.....	11
1.75 Our Mission.....	1	1.75 Data Base.....	11
1.76 Our Mission.....	1	1.76 Data Base.....	11
1.77 Our Mission.....	1	1.77 Data Base.....	11
1.78 Our Mission.....	1	1.78 Data Base.....	11
1.79 Our Mission.....	1	1.79 Data Base.....	11
1.80 Our Mission.....	1	1.80 Data Base.....	11
1.81 Our Mission.....	1	1.81 Data Base.....	11
1.82 Our Mission.....	1	1.82 Data Base.....	11
1.83 Our Mission.....	1	1.83 Data Base.....	11
1.84 Our Mission.....	1	1.84 Data Base.....	11
1.85 Our Mission.....	1	1.85 Data Base.....	11
1.86 Our Mission.....	1	1.86 Data Base.....	11
1.87 Our Mission.....	1	1.87 Data Base.....	11
1.88 Our Mission.....	1	1.88 Data Base.....	11
1.89 Our Mission.....	1	1.89 Data Base.....	11
1.90 Our Mission.....	1	1.90 Data Base.....	11
1.91 Our Mission.....	1	1.91 Data Base.....	11
1.92 Our Mission.....	1	1.92 Data Base.....	11
1.93 Our Mission.....	1	1.93 Data Base.....	11
1.94 Our Mission.....	1	1.94 Data Base.....	11
1.95 Our Mission.....	1	1.95 Data Base.....	11
1.96 Our Mission.....	1	1.96 Data Base.....	11
1.97 Our Mission.....	1	1.97 Data Base.....	11
1.98 Our Mission.....	1	1.98 Data Base.....	11
1.99 Our Mission.....	1	1.99 Data Base.....	11
2.00 Our Mission.....	1	2.00 Data Base.....	11

ISBN 1-895-113-90-X
 ISBN 0-895-113-91-8
 Pub. No. 100

For Copies Of This Document,
Please Contact:

LAND INFORMATION SERVICES DIVISION
Program Support Branch
2nd Floor, North Petroleum Plaza
9945 - 108 Street
Edmonton, Alberta
Canada
T5K 2G6

ISSN: 1188 - 987X
ISBN: 0-86499-921-6
Pub. No: I/467

LAND INFORMATION SERVICES DIVISION

ANNUAL REPORT 1991-92

Table of Contents

EXECUTIVE SUMMARY	i	6.0 RESOURCE INFORMATION SERVICES	11
1.0 INTRODUCTION.....	1	6.1 Natural Resources Information Systems Development and Support.....	11
1.1 Our Mandate.....	1	6.2 Natural Resources Information Management.....	11
1.2 Our Mission.....	1	6.3 Imagery.....	11
2.0 GEOGRAPHICAL POSITIONING	2	6.4 Ecological and Biological Information.....	12
2.1 Framework Survey Control	2	6.5 Terrain and Aquatic Information	13
2.2 Alberta Township System Coordination	2	6.6 Vegetation Information	13
2.3 Geodetic Computations.....	2	6.7 General Resource Mapping and Graphics.....	14
2.4 Photogrammetric Control	3	7.0 LAND-RELATED INFORMATION SYSTEMS (LRIS) PROJECT	16
3.0 PROVINCIAL BASE MAPPING	4	8.0 DISTRIBUTION SERVICES.....	17
3.1 Medium/Small Scale.....	4	8.1 LISD Revolving Fund Operations.....	17
3.2 1:20 000 Scale	4	8.2 Annual Sales Activity	17
4.0 MUNICIPAL INTEGRATED SURVEYING AND MAPPING (MISAM).....	5	8.3 Laser Copier Activity.....	17
4.1 Survey Control in MISAM Centres.....	5	8.4 Point of Sale System	17
4.2 Municipal Mapping.....	6	8.5 Aerial Photography	17
5.0 PARCEL MAPPING	6	8.6 Remote Access	17
		8.7 Non-Digital Products.....	17
		9.0 LAND SURVEY SYSTEM.....	18
		9.1 Legislation Administration.....	18
		9.2 Monitoring Standards	18
		9.3 Consulting.....	18
		9.4 Information Access	18
		9.5 Administration.....	18

LAND INFORMATION SYSTEMS DIVISION

ANNUAL REPORT 1994

Table of Contents

EXECUTIVE SUMMARY	1
1. INTRODUCTION	2
2. LAND INFORMATION SYSTEMS	3
3. LAND INFORMATION SYSTEMS	4
4. LAND INFORMATION SYSTEMS	5
5. LAND INFORMATION SYSTEMS	6
6. LAND INFORMATION SYSTEMS	7
7. LAND INFORMATION SYSTEMS	8
8. LAND INFORMATION SYSTEMS	9
9. LAND INFORMATION SYSTEMS	10
10. LAND INFORMATION SYSTEMS	11
11. LAND INFORMATION SYSTEMS	12
12. LAND INFORMATION SYSTEMS	13
13. LAND INFORMATION SYSTEMS	14
14. LAND INFORMATION SYSTEMS	15
15. LAND INFORMATION SYSTEMS	16
16. LAND INFORMATION SYSTEMS	17
17. LAND INFORMATION SYSTEMS	18
18. LAND INFORMATION SYSTEMS	19
19. LAND INFORMATION SYSTEMS	20
20. LAND INFORMATION SYSTEMS	21
21. LAND INFORMATION SYSTEMS	22
22. LAND INFORMATION SYSTEMS	23
23. LAND INFORMATION SYSTEMS	24
24. LAND INFORMATION SYSTEMS	25
25. LAND INFORMATION SYSTEMS	26
26. LAND INFORMATION SYSTEMS	27
27. LAND INFORMATION SYSTEMS	28
28. LAND INFORMATION SYSTEMS	29
29. LAND INFORMATION SYSTEMS	30
30. LAND INFORMATION SYSTEMS	31
31. LAND INFORMATION SYSTEMS	32
32. LAND INFORMATION SYSTEMS	33
33. LAND INFORMATION SYSTEMS	34
34. LAND INFORMATION SYSTEMS	35
35. LAND INFORMATION SYSTEMS	36
36. LAND INFORMATION SYSTEMS	37
37. LAND INFORMATION SYSTEMS	38
38. LAND INFORMATION SYSTEMS	39
39. LAND INFORMATION SYSTEMS	40
40. LAND INFORMATION SYSTEMS	41
41. LAND INFORMATION SYSTEMS	42
42. LAND INFORMATION SYSTEMS	43
43. LAND INFORMATION SYSTEMS	44
44. LAND INFORMATION SYSTEMS	45
45. LAND INFORMATION SYSTEMS	46
46. LAND INFORMATION SYSTEMS	47
47. LAND INFORMATION SYSTEMS	48
48. LAND INFORMATION SYSTEMS	49
49. LAND INFORMATION SYSTEMS	50
50. LAND INFORMATION SYSTEMS	51
51. LAND INFORMATION SYSTEMS	52
52. LAND INFORMATION SYSTEMS	53
53. LAND INFORMATION SYSTEMS	54
54. LAND INFORMATION SYSTEMS	55
55. LAND INFORMATION SYSTEMS	56
56. LAND INFORMATION SYSTEMS	57
57. LAND INFORMATION SYSTEMS	58
58. LAND INFORMATION SYSTEMS	59
59. LAND INFORMATION SYSTEMS	60
60. LAND INFORMATION SYSTEMS	61
61. LAND INFORMATION SYSTEMS	62
62. LAND INFORMATION SYSTEMS	63
63. LAND INFORMATION SYSTEMS	64
64. LAND INFORMATION SYSTEMS	65
65. LAND INFORMATION SYSTEMS	66
66. LAND INFORMATION SYSTEMS	67
67. LAND INFORMATION SYSTEMS	68
68. LAND INFORMATION SYSTEMS	69
69. LAND INFORMATION SYSTEMS	70
70. LAND INFORMATION SYSTEMS	71
71. LAND INFORMATION SYSTEMS	72
72. LAND INFORMATION SYSTEMS	73
73. LAND INFORMATION SYSTEMS	74
74. LAND INFORMATION SYSTEMS	75
75. LAND INFORMATION SYSTEMS	76
76. LAND INFORMATION SYSTEMS	77
77. LAND INFORMATION SYSTEMS	78
78. LAND INFORMATION SYSTEMS	79
79. LAND INFORMATION SYSTEMS	80
80. LAND INFORMATION SYSTEMS	81
81. LAND INFORMATION SYSTEMS	82
82. LAND INFORMATION SYSTEMS	83
83. LAND INFORMATION SYSTEMS	84
84. LAND INFORMATION SYSTEMS	85
85. LAND INFORMATION SYSTEMS	86
86. LAND INFORMATION SYSTEMS	87
87. LAND INFORMATION SYSTEMS	88
88. LAND INFORMATION SYSTEMS	89
89. LAND INFORMATION SYSTEMS	90
90. LAND INFORMATION SYSTEMS	91
91. LAND INFORMATION SYSTEMS	92
92. LAND INFORMATION SYSTEMS	93
93. LAND INFORMATION SYSTEMS	94
94. LAND INFORMATION SYSTEMS	95
95. LAND INFORMATION SYSTEMS	96
96. LAND INFORMATION SYSTEMS	97
97. LAND INFORMATION SYSTEMS	98
98. LAND INFORMATION SYSTEMS	99
99. LAND INFORMATION SYSTEMS	100

EXECUTIVE SUMMARY

Introduction

The Annual Report for 1991-92 of the Land Information Services Division of Alberta Forestry, Lands and Wildlife is prepared with the intention of giving an overview of both the work achieved during the year and of significant initiatives.

Initiatives

Land Related Information Systems

The creation of Land Information Alberta (LIA) was approved by Cabinet in September 1991. LIA will be the marketing and delivery mechanism for land related digital data in Alberta and is intended to provide a single computer gateway to such data. Supplier agreements are being negotiated with data custodians and system support agreements are being concluded both for hardware and software. The intention is to separate LIA from LISD in the interests of LIA's short term acceptance as a neutral broker by the Land Titles office and Crown Land Data Administration and in the longer term to position it as the natural, independent broker of all land related thematic data e.g., soils data, etc. LISD will continue to support LIA's initial launch during 1992-93 by way of budget and seconded staff. The "migration" of LIA has provided interesting challenges to management.

Aerial Photography Reproduction Contracts

The reproduction of black and white aerial photography has been fully contracted out by way of two contracts, one for contact work and one for enlargements. LISD has retained management of the film vault of over 4000 aerial films. Maps Alberta manages the cost recovery process under the revolving fund.

1:20 000 Digital Base Map Maintenance

As 80% of the province is now mapped, with the exception of the National Parks, the emphasis is turning to maintenance. Satellite imagery and aerial photography have been tested for update effectiveness. Both analogue and scanned aerial photography have been used for preliminary selection of update methodology. Further testing will occur in 1992-93.

Parcel Mapping

On April 1, 1992 the four year project was one month behind schedule, fifteen months after start up. The process is fully contracted, including quality control and maintenance, and it is anticipated that it will proceed on schedule to its December 31, 1994 completion. The three utility company stakeholders are using the digital data for their facilities management programs. Over thirty land survey firms are involved in the digital map compilation. GPS contracts involve four contractors placing control in smaller towns in support of the parcel mapping program.

Resource Information Support

Over 1700 km² of forest landscape planning has been completed using the digital elevation model (DEM) component of the 1:20 000 mapping program. DEM data was also used for forest fire tower visibility mapping with time saving in excess of 10 to 1.

Land Survey Plan Examination

A further reduction in survey plan examination by the Director of Surveys Branch has been achieved by moving the work to the Alberta Land Surveyors Association. Specifically the work involves condominium plans, re-establishment of monument plans and delayed posting plans. The resources will now be redeployed to ensure that a higher level of currency is maintained on other branch duties.

Financial Changes

A cut in the 1992-93 base budget of \$1 million reduces the A base to \$21 million. Inflation will reduce the buying power further. The revolving fund activity is expected to increase. Seventeen vacant positions were abolished.

Planning

Strategic planning continues at department, division and branch levels. Within LISD, recent activities point to an examination of Total Quality Management for its potential to assist the division in improving products and service. An LRIS market study was conducted by Coopers & Lybrand and provided firm data upon which to base marketing decisions by LIA.

Liaison

The division was instrumental in initiating a Ministerial Advisory Committee on Municipal Land Information Systems within Municipal Affairs. The intention is to promote the application of appropriate technology within all municipal agencies in the province following the raising of awareness by the successful URISA international conference in Edmonton. Increased use of GIS and CAD technologies will produce increased demand for digital data - particularly cadastral mapping data.

Technology

The LRIS project has required new knowledge to be gained by LISD in developing the single gateway concept. In 1992-93, the spatial database will be developed by contract. MacDonald Detwiler have completed the Business Area Analysis. The conversion and enhancement of in-house application software for the upgrade from Intergraph VAX VMS technology to Intergraph DEC UNIX technology in a networked graphics environment with fifty personal computers took two person years longer than estimated. The upgrade underlined for management the tendency to underestimate the requirements for extensive training which accompany significant technology changes. Visitech of Calgary participated in the system conversion.

LAND INFORMATION SERVICES

"INTEGRAL TO THE SUCCESS OF OTHERS"

1.0 INTRODUCTION

1.1 OUR MANDATE

The Land Information Services Division of Alberta Forestry, Lands and Wildlife, is responsible for provincial coordination and management of surveying, mapping, remote sensing and land-related information, and management and coordination of natural resource information on behalf of the department.

1.2 OUR MISSION

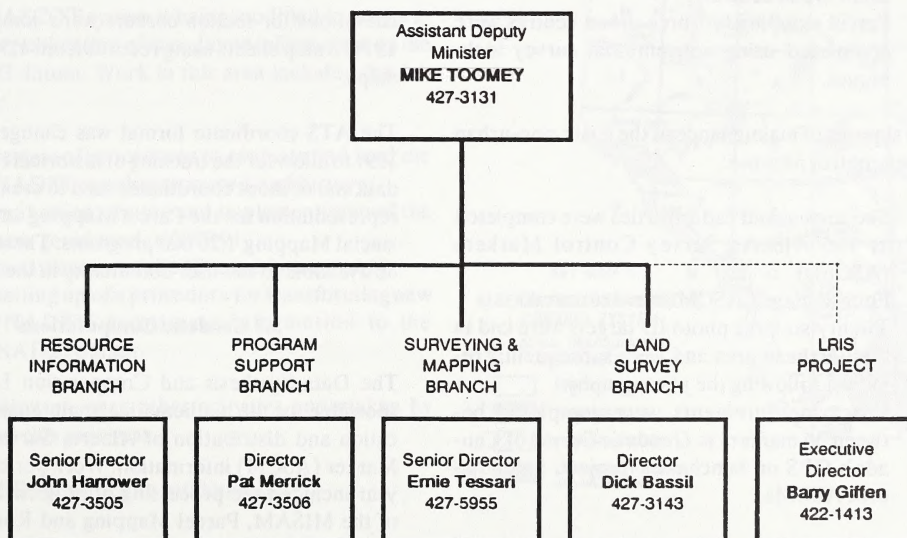
The Land Information Services Division, of Alberta Forestry, Lands and Wildlife, strives for excellence

in the management of surveying, mapping, remote sensing, natural resource and land-related information for the province of Alberta. As a leader in land and resource information, the division will:

- provide valuable land and resource information;
- provide high quality advice and assistance to clients;
- provide efficient, cost-effective public service; and
- foster cooperative and productive relationships with other divisions, departments, governments, professional associates and all clients.

Figure 1

LAND INFORMATION SERVICES DIVISION



2.0 GEOGRAPHICAL POSITIONING

2.1 Framework Survey Control

The physical component of the provincial control survey network is provided by the Control Survey Unit. The Control Survey Unit plans and coordinates the establishment and maintenance of survey control throughout the province. The primary focus in 1991/92 was the establishment of survey control in support of the Parcel Mapping Project and the Municipal Integrated Surveying and Mapping (MISAM) Program.

Major Accomplishments:

1. In support of the Parcel Mapping Project:

- Four new markers were placed in each of 22 small urban centres. Under contract, the marker positions were established using satellite positioning techniques.
- Cadastral ties were completed in 45 small urban centres.
- Spirit levels were completed in 40 small urban centres.
- Global Positioning Satellite System (GPS) quality control checks were carried out in 20 small urban centres.
- Parcel mapping for three urban centres were completed using conventional survey techniques.

2. In support of maintenance of the basic, non-urban survey control network:

- Site surveys and cadastral ties were completed at 105 Alberta Survey Control Markers (ASCMs).
- Four damaged ASCMs were restored.
- Twenty-six large photo ID targets were laid in the Barrhead area and were subsequently removed following the photography.
- Brace measurements were completed between 36 markers in Geodetic Survey of Canada's GPS on benchmark project, and adjacent ASCMs.

2.2 Alberta Township System Coordination

This program consists of integrating the Alberta Township System (ATS) with the Alberta Survey Control System (ASC) through field measurements and subsequently computing 800 000 coordinate pairs for governing monuments and key positions in the township system.

As well, coordinates have been computed for the surveyed boundaries of national parks, Indian reserves and Metis settlement plans. Several attributes (i.e., widths of road allowances were coded as being 66 ft. or 99 ft.) have also been compiled that complement the utility of the coordinate file.

In 1991-92, ATS coordinates were revised in 561 townships to reconcile discrepancies found during the Parcel Mapping process. These revised coordinates were located within National Topographic Series (NTS) sheets 72E, 83G and portions of 83A, 83H and 82I. Discrepancy checks were completed on approximately 550 newly registered plans that were located in previously mapped townships.

The ATS coordinates were updated in the vicinity of 53 municipalities as new ASC/cadastral ties were received from the Geodetic Survey Section.

Elevations for section corners were completed for 13 NTS map sheets using records from 1:50 000 NTS maps.

The ATS coordinate format was changed in June 1991 to allow for the tracking of historical coordinate data and of those coordinates used to create graphic representation for the Parcel Mapping and the Provincial Mapping 1:20 000 programs. These data will be available to the user community in the future.

2.3 Geodetic Computations

The Data Synthesis and Computation Unit is responsible for the mathematical maintenance, publication and distribution of Alberta Survey Control Marker (ASCM) information. Work performed this year included the processing of projects in support of the MISAM, Parcel Mapping and Rural Survey Control maintenance initiatives, as well as the

preparation and execution of the NAD83 readjustment.

Urban projects undertaken during the year included the towns of Grimshaw, Redcliff, Westaskiwin and Grande Cache, as well as maintenance activities initiated under the Survey Control Program. Thirty-four projects were completed in support of the Parcel Mapping Program, mostly through the use of GPS observations in which four new markers were positioned within each municipality considered.

- Projects started - 113
- Projects completed - 115
- New survey control markers - 1002
- Old markers considered - 2662
- Revised survey control markers - 1079

Development and maintenance work continued on the Multi-Purpose Alberta Survey Control Operations and Tasks (MASCOT) computer system for the efficient management of the attribute information associated with the 34 000 ASCMs within the provincial survey control record. This work included the completion of 190 service requests. An additional 47 service requests were completed related to information retrieval and software enhancements in support of the NAD83 readjustment exercise.

The MASCOT system is being modified in preparation for publication of coordinate information on the NAD83 datum. Work in this area included the following:

- review of procedures to evaluate and load the NAD83 coordinate record and history;
- evaluation, testing and implementation of the new geoid model, GSD91;
- modification of the ID card format; and
- setting up of a procedure for transforming new (NAD83) coordinate information to the NAD27 datum.

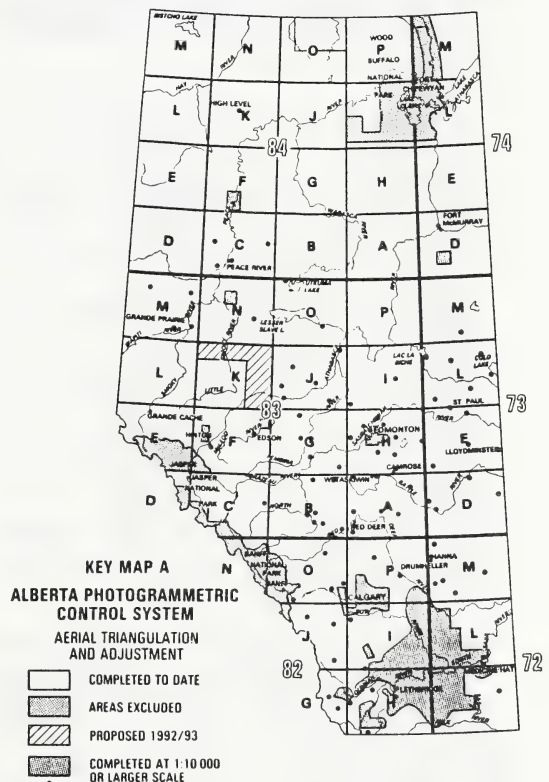
The following were other activities undertaken by the Unit this past year:

- GPS contractors validations;

- adoption of GPS Specifications and Procedures document for GPS data collection to the provincial second order standard;
- evaluation, testing and distribution of the National Transformation software package for transforming between the NAD27 and NAD83 datums; and
- development of specifications and procedures for the use of data collectors.

2.4 Photogrammetric Control

Control services were provided to users within government and private industry. Key Map A indicates areas covered.



3.0 PROVINCIAL BASE MAPPING

3.1 Medium/Small Scale

In 1991-92, the following was accomplished:

The 16 digital files in the 1:20 000 city series were maintained as current:

AIRDRIE	LEDUC
CALGARY	LETHBRIDGE
CAMROSE	LLOYDMINSTER
DRUMHELLER	MEDICINE HAT
EDMONTON	RED DEER
FORT MCMURRAY	SPRUCE GROVE
FT. SASKATCHEWAN	ST. ALBERT
GRANDE PRAIRIE	WETASKIWIN

Another 18 digital 1:20 000 town files were completed bringing to 28 the number completed and being maintained as current:

BONNYVILLE	PINCHER CREEK
CLARESHOLM	PONOKA
COCHRANE	REDCLIFF
COLD LAKE	ROCKY MTN. HOUSE
DRAYTON VALLEY	STETTLER
FORT MACLEOD	STONY PLAIN
GRAND CENTRE	ST. PAUL
HIGH RIVER	STRATHMORE
LACOMBE	TABER
MORINVILLE	THREE HILLS
OKOTOKS	VEGREVILLE
OLDS	VERMILION
PEACE RIVER	WAINWRIGHT
PICTURE BUTTE	WESTLOCK

Subsequent hard copy was completed for duplication and distribution by Maps Alberta, for all city and town 1:20 000 maps.

All 50 digital files in the 1:250 000 series were maintained as current. Nineteen multicoloured maps were produced for lithographing and distribution by Maps Alberta.

The 1:750 000, 1:1 000 000 and 1:2 000 000 digital files were kept current. Multicoloured maps were produced for lithographing and distribution by Maps Alberta.

Twenty cartographic mapping projects were completed through the Revolving Fund.

A Geographic Names Database was completed with hard copy being distributed through Maps Alberta. The database is being maintained as current.

In total, 8 maps, 118 base maps, 467 bases, 616 prints, 4 miscellaneous charts and graphs and 77 digital files were distributed. In addition, 247 digital position and representation base files, covering the 1:2 000 000, 1:1 000 000, 1:750 000, 1:250 000 and 1:20 000 cities and towns, were maintained as current.

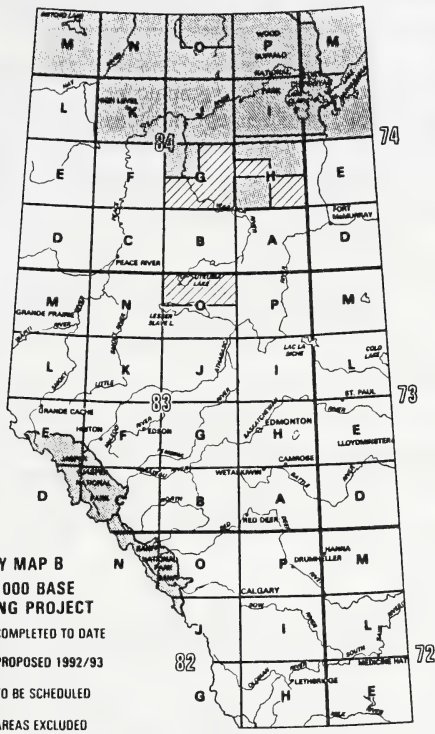
3.2 1:20 000 Scale

As part of the Provincial Digital Base Mapping Project, the production of 140 digital files was contracted in 1991-92. As of March 31, 1992, up to 2220 files had been completed, covering 80 percent of the province. To complete the provincial coverage, excluding the national parks, there are 555 digital files remaining.

In addition, the following activities were accomplished:

- a total of 150 digital files was maintained for selected feature classes; and
- 762 diazo prints were distributed through Maps Alberta with digital sales totaling 2200 files.

Key Maps B and C indicate locations of contracting projects completed to date, planned contracting for 1992-93 and the data available for distribution as of April 1, 1992.



4.0 MUNICIPAL INTEGRATED SURVEYING AND MAPPING (MISAM)

4.1 Survey Control in MISAM Centres

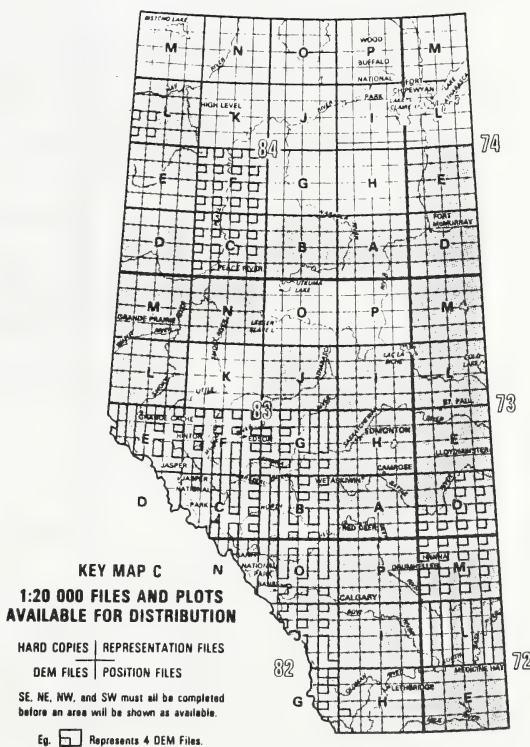
The Geodetic Survey Section plans for and coordinates the establishment and maintenance of high density survey control in and adjacent to major urban centres in the province. This provides the geographical positioning system or survey control component of the MISAM program as administered under municipal/provincial cost-sharing agreements.

Major Accomplishments:

- Block ties were completed in Sherwood Park and Ft. Saskatchewan.
- Photo checks were completed for Gibbons, Beaumont, Barrhead and Stony Plain.

- Quality control checks were completed and control measurements made to framework control for Redcliff and Wetaskiwin.
- Reconnaissance marker installation and quality control measurements were completed in Grande Cache.
- The control measurements were completed for Redcliff, Grande Cache and Wetaskiwin Extension by contract.
- Seventy-one maintenance projects were initiated and 66 completed.
- Two thousand condition reports were processed under part 3 of the Survey Regulation and ASC fabric maintenance.
- Fourteen ASCMs were positioned at Grande Cache by GPS under contract to a private firm.

The MISAM Program is now under formal agreement with 73 municipalities in the province.



4.2 Municipal Mapping

Under the MISAM Program, the Cadastral Mapping Section is responsible for the development and maintenance of land survey coordinates and digital cadastral map bases at a scale of 1:1000 for major urban centres in the province. From the 1:1000 bases, 1:5000 digital map bases are created and combined with contour (1-metre) and orthophoto components. The contour component is derived from a digital elevation model (DEM) obtained photogrammetrically for the area.

In 1991-92, coordinates and maps were created for 62 new 1:1000 bases in Barrhead, 30 in Beaumont, 37 in Gibbons, 49 in Grimshaw and 140 in Stony Plain. Contracts for the generation of coordinates, linework and text were established for Barrhead and Stony Plain. Photogrammetric contracts for Barrhead, Beaumont, Gibbons, Grimshaw and Stony Plain were also established. Orthophoto/contour/cadastral mapping at a scale of 1:5000 was completed for Lacombe, High River, Barrhead, Beaumont, Gibbons, Grimshaw and Stony Plain. Cadastral bases at 1:1000 for Coaldale, Brooks and Canmore were converted into digital format. In addition to Edmonton and Calgary, coordinates and mapping in 39 other municipalities were maintained.

In total, coordinates for 318 new and 1523 revised 1:1000 bases were generated. Maps for 567 new and 1404 revised 1:1000 bases, 16 new and 16 revised 1:5000 bases and 29 1:5000 orthophoto/contour/cadastral bases were completed. In addition, 5768 digital files and 1331 hard copy bases were distributed to users. A detailed summary of the MISAM Program appears as Tables 1 & 2.

5.0 PARCEL MAPPING

The Parcel Mapping Program is responsible for the compilation, in digital graphic format, of registered plans of survey (except those cancelled or superseded) in each of the Alberta Land Titles Offices. Each of these plans of survey will be compiled using the Alberta Township System as the underlying and controlling fabric.

When complete, there will be approximately 7000 digital graphical files available for sale on a township basis through Maps Alberta.

There were approximately 476 townships comprising 25 800 registered plans contracted for digital compilation. Initial preparation for digital compilation was conducted on 656 townships comprising approximately 35 124 registered plans. During this fiscal year, 577 digital township files were approved for distribution.

Maintenance of 204 digital township files were completed involving approximately 572 registered survey plans. New maintenance procedures were initiated as well as the development and distribution of the Parcel Mapping Maintenance Specifications and Guidelines document.

An agreement with a major utility company involving the digital compilation of 208 predetermined townships was completed. These digital township files have been approved for distribution.

Table 1: Municipal Integrated Surveying and Mapping (MISAM) Program
1:1 000 and 1:5 000 Mapping Series

*Digital Elevation Model

Municipality	Manual		Digital		D.E.M.*
	Cadastral	Contours	Cadastral	Contours	
Airdrie			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Barrhead			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Beaumont			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Black Diamond		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Bonnyville			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Bow Island			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Brooks		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Calgary			<input checked="" type="checkbox"/>		
Camrose			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Canmore		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Cardston			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Carstairs		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Claresholm			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Coaldale		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Cochrane			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Cold Lake			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Crowsnest Pass			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Drayton Valley			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Drumheller/MD 7			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Edmonton			<input checked="" type="checkbox"/>		
Edson			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Fort MacLeod		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Fort McMurray		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Fort Saskatchewan		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Gibbons			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Grand Centre			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Grande Cache	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1992/93	1992/93	1992/93
Grande Prairie			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Grimshaw			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hanna			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
High Level			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
High Prairie			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
High River			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hinton			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Innisfail		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Lac La Biche			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Table 1: Municipal Integrated Surveying and Mapping (MISAM) Program
1:1 000 and 1:5 000 Mapping Series

*Digital Elevation Model

Municipality	Manual		Digital		D.E.M.*
	Cadastral	Contours	Cadastral	Contours	
Lacombe			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Leduc		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Lethbridge			<input checked="" type="checkbox"/>		
Lloydminster			<input checked="" type="checkbox"/>		
Magrath			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Medicine Hat			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Morinville			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Okotoks		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Olds		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Oyen			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Peace River		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Picture Butte		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Pincher Creek		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Ponoka		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Raymond			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Redcliff		<input checked="" type="checkbox"/>	1992/93		
Red Deer		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Rocky Mountain House		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Slave Lake			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Spruce Grove			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
St. Albert			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
St. Paul			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Stettler		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Stony Plain			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Strathcona, County of			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Strathmore			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Swan Hills			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Taber			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Three Hills			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Turner Valley		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Vegreville		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Vermilion			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Wainwright			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Westlock			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wetaskiwin			<input checked="" type="checkbox"/>		
Whitecourt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1992/93		

Table 2: Municipal Integrated Surveying and Mapping (MISAM) Program
1:1 000 and 1:5 000 Mapping Series

Municipality * indicates bases available direct from city	1:5 000 Cadastral/ Orthophoto/Contour Base	1:5 000 Orthophoto/Contour Base	1:5 000 Cadastral Base	1:1 000 Cadastral Base
Airdrie	9 Sheets (1981)		9 Sheets (1986)	153 Sheets (1986)
Barrhead	4 Sheets (1992)		4 Sheets (1992)	62 Sheets (1992)
Beaumont	1 Sheet (1992)		1 Sheet (1992)	30 Sheets (1992)
Black Diamond	4 Sheets (1976)		4 Sheets (1988/89)	30 Sheets (1992)
Bonnyville	4 Sheets (1976)		4 Sheets (1988)	54 Sheets (1988)
Bow Island	5 Sheets (1983)		5 Sheets (1989)	52 Sheets (1992)
Brooks		11 Sheets (1976)	10 Sheets (1991)	107 Sheets (1992)
Calgary*				1237 - Various Yrs.
Camrose	8 Sheets (1988)	8 Sheets (1988)	8 Sheets (1990)	148 Sheets (1992)
Canmore	8 Sheets (1980)		8 Sheets (1980)	79 Sheets (1992)
Cardston	4 Sheets (1981)		4 Sheets (1990)	26 Sheets (1992)
Carstairs		6 Sheets (1977)	6 Sheets (1988)	46 Sheets (1991)
Claresholm	6 Sheets (1983)		6 Sheets (1991)	66 Sheets (1991)
Coaldale	4 Sheets (1976)		4 Sheets (1978/79)	63 Sheets (1991)
Cochrane	6 Sheets (1981)		6 Sheets (1981)	90 Sheets (1981)
Cold Lake	5 Sheets (1981)		5 Sheets (1988)	71 Sheets (1988)
Crowsnest Pass	15 Sheets (1985)		15 Sheets (1988)	173 Sheets (1988)
				39 Ortho/Cad (1985)
Drayton Valley	7 Sheets (1983)		7 Sheets (1989)	85 Sheets (1991)
Drumheller/MD 7	17 Sheets (1989)		17 Sheets (1990)	277 Sheets (1992)
Edmonton*				1571 Sheets (1992)
Edson	8 Sheets (1985)		8 Sheets (1990)	98 Sheets (1991)
Fort MacLeod	6 Sheets (1978)		6 Sheets (1990)	108 Sheets (1992)
Fort McMurray		18 Sheets (1978)	12 Sheets (1988/89)	124 Sheets (88/89)
Fort Saskatchewan	4 Sheets (1977)		4 Sheets (1991)	95 Sheets (1992)
Gibbons	3 Sheets (1992)		3 Sheets (1992)	37 Sheets (1991)
Grand Centre	4 Sheets (1981)		4 Sheets (1987)	48 Sheets (1987)
Grande Cache	1 Sheet (1976)		1 Sheet (1979)	15 Sheets (71-79)
Grande Prairie	6 Sheets (1982)		6 Sheets (87/88)	157 Sheets (1992)
Grimshaw	2 Sheets (1992)		2 Sheets (1992)	49 Sheets (1991)
Hanna	6 Sheets (1981)		6 Sheets (1981)	88 Sheets (1981)
High Level	3 Sheets (1988)		3 Sheets (1989)	60 Sheets (1989)
High Prairie	6 Sheets (1988)		6 Sheets (1989)	76 Sheets (1992)
High River	7 Sheets (1990)		7 Sheets (1990)	85 Sheets (1990)
Hinton	8 Sheets (1983)		9 Sheets (1989)	106 Sheets (1992)
Innisfail	5 Sheets (1983)		5 Sheets (1987)	55 Sheets (1992)
Lac La Biche	8 Sheets (1983)		8 Sheets (1988)	61 Sheets (1988)

Table 2: Municipal Integrated Surveying and Mapping (MISAM) Program
1:1 000 and 1:5 000 Mapping Series

Municipality * indicates bases available direct from city	1:5 000 Cadastral/ Orthophoto/Contour Base	1:5 000 Orthophoto/Contour Base	1:5 000 Cadastral Base	1:1 000 Cadastral Base
Lacombe	6 Sheets (1991)		6 Sheets (1991)	128 Sheets (1992)
Leduc	9 - (76/77/79/80)		9 - (1976-1980)	80 Sheets (1991)
Lethbridge			12 Sheets (1990)	142 Sheets (1991)
Lloydminster			6 Sheets (1990)	77 Sheets (1992)
Magrath	6 Sheets (1980)		6 Sheets (1980)	81 Sheets (1992)
Medicine Hat	(1992/93)	19 Sheets (1981/83)	(1992/93)	360 Sheets (1991)
Morinville	6 Sheets (1983)		6 Sheets (1989)	58 Sheets (1992)
Okotoks	5 Sheets (1978)	5 Sheets (1977)	5 Sheets (1985)	57 Sheets (1985)
Olds	4 Sheets (1978)		4 Sheets (1987)	43 Sheets (1987)
Oyen	4 Sheets (1984)		4 Sheets (1987)	30 Sheets (1987)
Peace River	8 Sheets (1977)		6 Sheets (1990)	98 Sheets (1990)
Picture Butte	4 Sheets (1978)		4 Sheets (1990)	45 Sheets (1991)
Pincher Creek	4 Sheets (1979)		4 Sheets (1988)	72 Sheets (1991)
Ponoka	4 Sheets (1977)		4 Sheets (1987)	45 Sheets (1992)
Raymond	4 Sheets (1978)		1 Sheet (1989)	31 Sheets (1991)
Redcliff	(1992/93)		(1992/93)	(1992/93)
Red Deer		8 Sheets (1981)	11 Sheets (1990)	186 Sheets (1992)
Rocky Mtn House	8 Sheets (1981)		8 Sheets (1987)	93 Sheets (1987)
Slave Lake	5 Sheets (1989)		5 Sheets (1990)	77 Sheets (1991)
Spruce Grove		1:1000 contours only	12 Sheets (1990)	108 Sheets (1992)
St. Albert	8 Sheets (1985)		8 Sheets (1991)	145 Sheets (1991)
St. Paul	6 Sheets (1981)		6 Sheets (1990)	66 Sheets (1992)
Stettler	5 Sheets (1979)		5 Sheets (1990)	100 Sheets (1991)
Stony Plain	6 Sheets (1992)		6 Sheets (1992)	140 Sheets (1991)
Strathcona, County	14 Sheets (1989)		14 Sheets (1990)	201 Sheets (1991)
Strathmore	6 Sheets (1986)		6 Sheets (1988)	78 Sheets (1988)
Swan Hills	6 Sheets (1986)		6 Sheets (1987)	70 Sheets (1987)
Taber	9 Sheets (1985)		9 Sheets (1990)	106 Sheets (1992)
Three Hills	2 Sheets (1986)		2 Sheets (1987)	50 Sheets (1987)
Turner Valley	4 Sheets (1976)		4 Sheets (1989)	34 Sheets (1989)
Vegreville	9 Sheets (1978)		9 Sheets (1989)	58 Sheets (1990)
Vermilion	6 Sheets (1982)		6 Sheets (1987)	58 Sheets (1991)
Wainwright	4 Sheets (1980)		4 Sheets (1988)	54 Sheets (1988)
Westlock	4 Sheets (1986)		4 Sheets (1989)	64 Sheets (1992)
Wetaskiwin			4 Sheets (1991)	63 Sheets (1992)
Whitecourt	6 Sheets (1980)		6 Sheets (1980)	25 Sheets (1980)

6.0 RESOURCE INFORMATION SERVICES

The Resource Information Branch provides service to clients within the department: the Alberta Forest Service, Public Lands, Fish and Wildlife divisions. A wide variety of natural resources information products and services were delivered to branch clients to ensure that the department had sufficient resource information available for effective decision-making.

6.1 Natural Resources Information Systems Development and Support

A major accomplishment during the year was the continued development of an automated Vegetation Information System to accommodate data collected by department staff as well as Forest Management Agreement holders. Data and process models were completed as part of the system development process. Several reports were produced to provide details regarding the various stages of the project.

Work continued with Edson Forest staff and others in developing customized output information products from the Alberta Vegetation Inventory database. Personnel from the Natural Resource Information Systems Unit cooperated with several department client groups to explore uses of Geographic Information Systems (GIS) technology. Efforts were directed to consulting on software applications procedures for visual impact analysis studies and microcomputer applications related to management of public lands.

The branch continued to provide support for the Alberta Bird Atlas project of the Fish and Wildlife Division. Procedures were developed for transferring publication map files from departmental hardware to a MacIntosh computer to support final Atlas production by the Federation of Alberta Naturalists.

In addition, efforts were directed towards enhancement and maintenance of the Climate Data Management System. Support staff continued to maintain the branch microcomputer network and completed hardware upgrades and replacements.

6.2 Natural Resources Information Management

Staff continued to improve access to existing information with over 400 information packages being supplied. This represents a 30 percent increase in requests compared with the previous year. A limited amount of continuing effort was devoted to development of information-finding aids (i.e. indices and catalogues).

Branch staff provided continuing support to the departmental Strategic Planning Task Force on Resource Information. The final report of the Strategic Information Task Force was prepared and submitted to the departmental Executive Committee. A number of the recommendations within the report were implemented. The most significant activity was the creation of a Board of Directors, Natural Resource Information that now operates to plan and implement a departmental approach to information management. Board-related assignments resulted in a detailed investigation of the department's natural resources information needs, as well as the development of a branch workplan that fits identified information requirements.

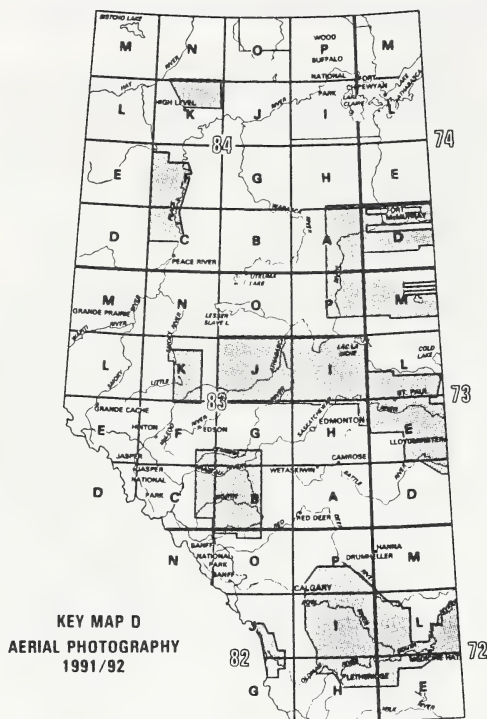
6.3 Imagery

6.3.1 Aerial Photography

Departmental operations were supported through the completion of 267 aerial photography projects in various parts of the province (see Key Map D). Approximately 138 000 km² or 43 000 linear km of photo coverage were obtained using a wide variety of film emulsions and taken at various scales.

Staff completed 10 semicontrolled aerial photo mosaics for departmental clients. These photo maps were produced for 10 separate project areas covering over 5000 km² in total.

Three GPS (Global Positioning System) field trials were conducted in cooperation with staff from the line divisions. Two systems vendors demonstrated their equipment in field locations on work that directly related to operational information-gathering. These trials were conducted in the Lac La Biche, Bow Crow and Peace River forests. Preliminary



results from these field trials show GPS technology may prove to be a valuable resource management tool.

6.3.2 Remote Sensing

Remote Sensing unit staff continued efforts to investigate uses for associated technology by working with the client group to develop promising applications of image analysis. One of the more significant projects related to the detection and mapping of conifer understory in northern forests. Another important project concentrated on using satellite imagery to determine forest fuel classification in support of forest fire protection. The work unit also maintained satellite image search and ordering services for client groups. Preliminary work was completed on evaluating optimum satellite band combinations and effective use within departmental program areas. Consideration was given to the use of remotely

sensed data for map and database update, particularly with respect to the Alberta Vegetation Inventory Program of the branch.

6.4 Ecological and Biological Information

The Resource Analysis unit continued to provide ecological studies in continuing support of the integrated resource management programs. An ecological inventory of the Wandering River Integrated Resource Planning extension area was completed while a similar study of the Notikewin South Planning area is near completion. Soils mapping in the Birch Mountains-Firebag Planning area was initiated. Ongoing support for other new and continuing integrated resource plans was also provided including the Berland, Fox Creek-Knight, Rocky-North Saskatchewan, Red Deer River Corridor and Utikuma planning areas. Ecological studies were also initiated in the Wilmore Wilderness Park and the Red Deer-Panther Corners areas in support of regional integrated decision-making.

Biophysical inventories including an evaluation of significant features were completed in the Pine Sands and Jackpine areas, as well as a vegetation inventory of the La Saline Natural Area in support of the Natural Areas Program. Environmentally significant area studies were completed in six project areas including the M.D. of Cypress, the M.D. of Forty Mile, the County of Newell, the M.D. of Clearwater (White Area), the M.D. of Brazeau (White Area) and the Red Deer River Corridor (east of Drumheller). Information on native prairie habitat in the prairie and parkland ecoregions was provided in support of the Prairie Conservation Action Plan.

Biophysical inventories and evaluations of the Nordegg Corridor and Orloff-Otter Lakes areas were submitted as primary information components to support management planning activities for these local lakeshores and stream corridor.

A compilation of historical population data for major wildlife species and projections based upon these records were completed for the Wandering River Integrated Resource Planning extension area. Cover type and access maps were produced for the Manyberries Environmentally Significant Area and

field work was completed in the Purple Springs area. These are two of six sensitive areas in southern Alberta identified as priority concerns by the Fish and Wildlife Division. An assessment of the impacts of access on ungulates in the Castle River Access Management Plan area was also conducted.

Two local area climate networks, one in the Northeast Region and another in the Southern Region, were operated to provide detailed climatic information. This information is primarily used to provide further data for range assessment work carried out by Public Lands staff.

6.5 Terrain and Aquatic Information

Physical land classification was carried out and mapped at a 1:20 000 scale for approximately 1100 km² of rangeland in various locations. Another 12 000 km² of land classification work was completed at a 1:100 000 scale in the Northeast Region.

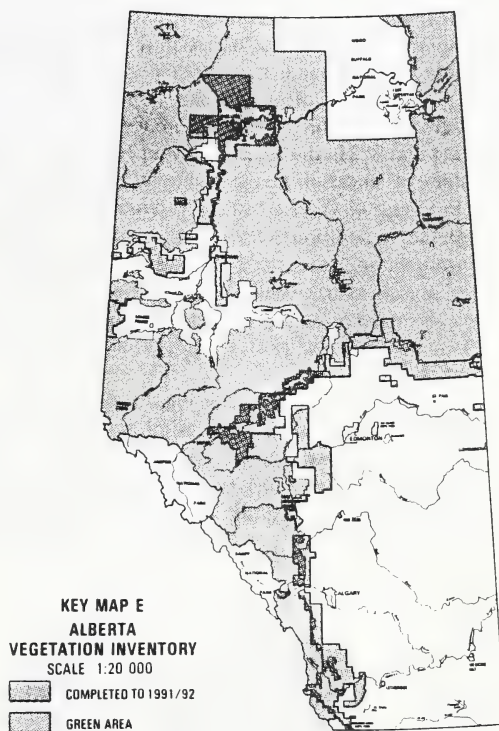
Habitat studies were completed for Little Fish Lake and further information was provided to facilitate development of an access management plan for the Ministik Lake Bird Sanctuary. Erosion hazard studies were completed in the Clear Hills and Swan Hills areas, Rocky-Clearwater Forest and P11 Forest Management Unit during 1991-92.

In cooperation with Fish and Wildlife, a project was undertaken to collect fisheries and habitat data in 11 drainages in the Wandering River Integrated Resource Planning area.

6.6 Vegetation Information

Alberta Vegetation Inventory information was gathered for 98 townships in Forest Management Units W01, E01, F8. An additional five townships of data were obtained for Public Lands in the Northeast Region (see Key Map E). In preparation for interpretation and mapping in 1992-93, aerial photography was flown in Forest Management Units C5, B7 and a small portion of F9.

Developmental work was completed to pilot a vegetation inventory update process involving automated analysis of satellite imagery. The results of the pilot



project are to be documented in the first quarter of 1992-93.

Detailed ground vegetation surveys were completed in support of the Alberta Forest Service's Permanent Sample Plot data collection, forest regeneration and stand dynamics studies. Similar work was carried out in the Northeast and Peace River regions to assist Public Lands in the development of a benchmark vegetation monitoring program. Range inventory data were collected for two projects in the Rocky/Clearwater and Bow/Crow Forests. Staff also assisted in the development of automated procedures for handling range inventory information.

A review of old growth forest policies and management practices in Canada and the northwestern United States was completed. This review will contribute to a framework for policy decision on old growth forests in Alberta.

The Reconnaissance Vegetation Inventory program continued as a valuable evaluation tool in support of resource management in the province (see Key Map F). Vegetation classification and habitat evaluation were completed for Wildlife Management Units 328, 344 and 352 in the Eastern Slopes Region. The Habitat Classification Peace Alpac/Daishowa project, involving 45 000 km² of the province was also completed. In addition, Reconnaissance Vegetation Inventory maps, to assist in the identification of timber stands in the White Area of the province, were completed for the Peace River-Grande Prairie block and a portion of central Alberta.

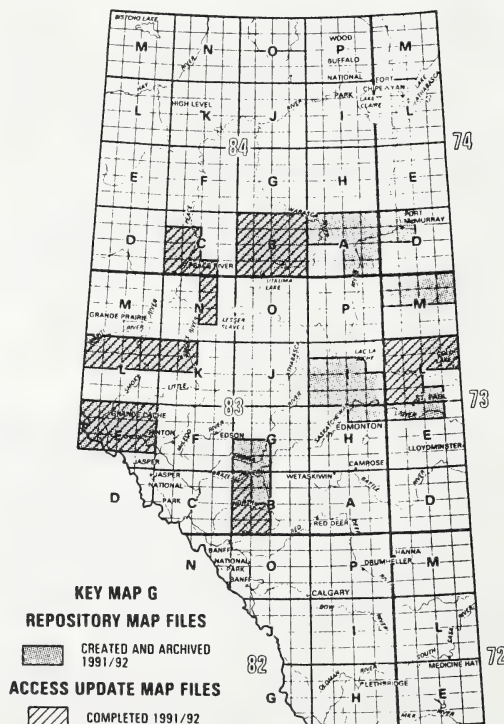
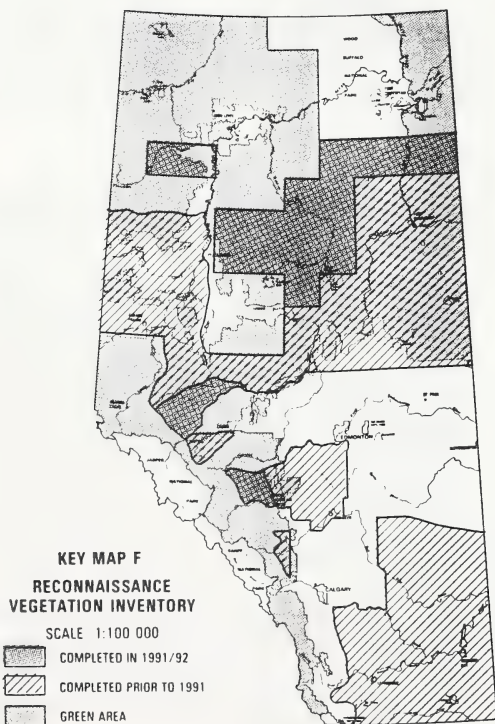
Assessment work continued on the evaluation of optimum combinations of aerial photography films and processes for vegetation interpretation. Test data were distributed on a national basis to cooperating air photo interpreters as part of a general survey.

6.7 General Resource Mapping and Graphics

During the year, Resource Mapping responded to approximately 500 departmental requests for a variety of mapping and graphics services.

In response to priority requirements identified by Public Lands and the Alberta Forest Service, automated procedures were developed to produce client-specified maps and graphics from Land Status Automated System data.

Access and land use change information was gathered from various sources and was referenced to the provincial digital 1:20 000 base map stored in a digital data repository (See Key Map G). Cooperative arrangements with departmental field staff resulted in an exchange of update information for the immediate benefit of regional operations as well as the wider group of departmental map users. These



repository data are available as the basic map framework for natural resources maps that are produced for various departmental clients. Sixteen updated, 1:50 000-scale access series maps were produced from the digital files.

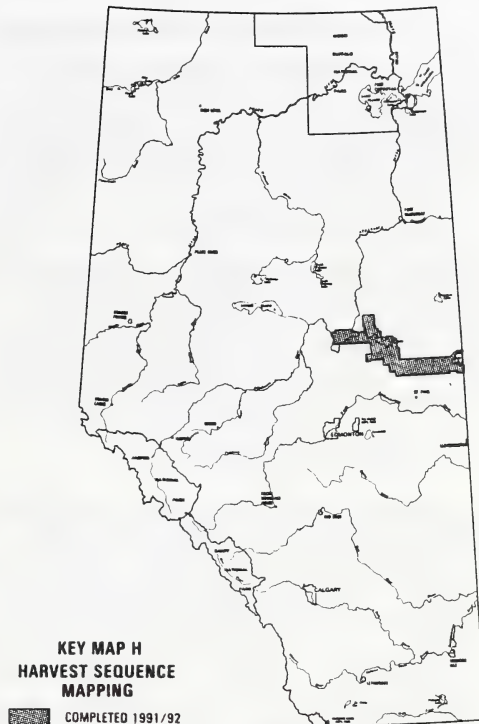
Forest landscape planning operations were supported through the provision of 1700 km² of digital elevation information. Most of the elevation modeling information was extracted from provincial digital, 1:20 000 base mapping data and merged to cover specific areas of interest. Some additional detailed elevation information was produced through photogrammetric measurements and data processing.

Mapping was completed for the Rumsey Parkland and Castle River Access Management Plans. Project area map bases were completed in support of the department's integrated resource planning program.

Cartographic and photogrammetric support was provided to a wide variety of ecological and biological studies that were undertaken for departmental clients throughout the year. This work included the completion of maps for four lakeshore studies and one natural area as well as Ecoregion and Ecodistricts of Alberta.

Maps were produced in support of Erosion Hazard Ratings work in the Rocky/Clearwater Forest and four Physical Land Classification overview studies in the Northeast Region.

The Alberta Vegetation Inventory project continued to be a major draw on resource mapping services. Orthophoto maps and other baseline information were obtained to provide the georeferencing framework for the inventory data. Vegetation polygons were digitized and processed to create a digital database of information that was used as the basis for automated analysis as well as for the production of a wide variety of client-specified map products.



Alberta Vegetation Inventory data were used in a Geographical Information Systems project to complete 86 townships of Harvest Sequence Mapping in the Northeast Region (Key Map H).

Range mapping was completed for 15 grazing leases, 7 grazing reserves and 6 grazing allotments.

7.0 LAND-RELATED INFORMATION SYSTEMS (LRIS) PROJECT

In the spring of 1990, the Legislature approved a four-year, \$24.6-million funding commitment for the LRIS Network Project. This included \$8.6 million to develop the LRIS Network Project and \$16 million to undertake and complete the Parcel Mapping Project by 1994. These two projects will permit the LRIS Network to start up business in 1992, initially delivering access to existing data and products in the Primary Systems. The Primary Systems include the two land registries (Alberta Land Titles and the Crown Land Registry) and the data maintained by the geopositioning and mapping systems of Land Information Services Division (LISD).

In September, 1991 Cabinet approved the formation of Land Information Alberta (LIA). As the LRIS Business Entity, LIA will operate the LRIS Network. LIA operates within the department's Revolving Fund and reports through the LIA Executive Director, to the Deputy Minister of Forestry, Lands and Wildlife. In total, LIA will have a staff of twelve positions, which have been approved for recruitment. Three Customer Services Officers and two Market Development Officers have been staffed. Three secondments in the LIA organization include the Executive Director, the Director of Corporate Services and the Manager of the Customer Services Unit.

Business development activities have included the negotiating of Data Supplier Agreements and System Support Agreements. Data Supplier Agreements are in the process of being concluded with LISD, Attorney General Land Titles Office and Crown Land Data Services. An agreement has been concluded with Public Works, Supply and Services to provide facilities management services, and with Automated Information Services Division (AISD) for the provision of application support.

The LRIS Network Branch is responsible for the technical development of the LRIS Network, which includes the development of the LRIS Gateway (the computer system that will manage access to the LRIS Network) and the LRIS Spatial Database. Significant progress was made during the year. The

LRIS Network Branch coordinated the completion of Release 1 of the LRIS Gateway. The Business Area Analysis (BAA) stage of the LRIS Spatial Database development was completed, and the process to contract for completion of the system was initiated.

The LRIS Steering Committee is proceeding to review policies and procedures from their respective member departments that regulate access to provincial government land-related databases.

The LRIS Management Committees have been active during the past year, participating in the development activities of the LRIS Network and in providing feedback from their respective government departments. The Thematics Systems Management Committee has produced a prioritized set of 12 provincial government thematics systems for initial connection to the LRIS Network.

The LRIS Committees addressing standards are presently reviewing the first edition of the LRIS EDP Standards and LRIS Common Data Standards manuals. These manuals were adopted by the LRIS Steering Committee as LRIS Standards early in 1992.

The Ministerial Advisory Committee on LRIS (MAC) represents the municipal government and private sector, and advises the Minister on the development of the LRIS Project. This committee has taken a strong role in assisting the formulation of the structure under which LIA will operate. The MAC Subcommittee on Municipal Systems has continued to work towards resolving issues regarding the integration of municipal systems into the LRIS Network.

8.0 DISTRIBUTION SERVICES

Maps Alberta is responsible for the distribution of maps, aerial photography and digital products to the public and government departments. The two offices in Edmonton and Calgary and the 81 dealers throughout the province also provide maps and charts produced by the federal government.

8.1 LISD Revolving Fund Operations

The Revolving Fund operation experienced annual sales of \$2 087 656 in 1991-92, up from last year's level of \$1 955 228.

8.2 Annual Sales Activity

Sales activity is depicted for the 1991-92 year as follows:

- Public \$1 063 385 (51 % of total sales)
- Dealers \$308 691 (15 % of total sales)
- FLW \$307 479 (14 % of total sales)
- Other Gov't \$408 101 (20 % of total sales)

- Total Sales \$2 087 656

These sales are defined as 66 percent to the private (Public + Dealers) and 34 percent to government (FLW + Other Government) compared to 64 percent and 36 percent, respectively, over last year.

8.3 Laser Copier Activity

The activity for laser copies increased 20% to \$179 954 over the previous year's level of \$150 552.

8.4 Point of Sale System

During this last year, Maps Alberta installed a point of sales accounting system to all points of sales as well as provided accounting services to Public Lands and Land Information Alberta (LIA).

8.5 Aerial Photography

The production of contact prints and enlargements from black and white aerial photography has been privatized by two contracts and is managed by Maps Alberta under a cost recovery project.

8.6 Remote Access

Survey control coordinates managed by the MAS-COT system continued to be transmitted to requesting clients by remote access through the MADD system. Many surveyors prefer to receive small numbers of coordinates by telephone or fax rather than by dial up through a computer.

8.7 Non-Digital Products

In addition to provision of digital products, copies of Wellsite Traverse Plans, surveyor field notes, benchmarks, and historical township plans were made available to the public.

9.0 LAND SURVEY SYSTEM

Property boundaries governing the extent of interest in land are maintained and preserved within the land survey system under the authority of the Surveys Act, the Land Surveyors Act and the Boundary Surveys Act. Under this mandate, the following accomplishments were realized in 1991-92.

9.1 Legislation Administration

The implementation of Section 9 of the Surveys Act (Boundary Adjudication Board) continues to wait further administrative detail.

Two reports on surveys involving the Alberta/British Columbia boundary were finalized and forwarded to the Province of British Columbia and the Surveyor General, Ottawa.

The proposed Surveying Professions Act remains under review by government and awaits further submission from the profession.

Seven plans of survey were approved and "confirmed" by the Director of Surveys involving surveys under Section 29 of the Surveys Act and "common boundaries" between provincial and federal lands.

Review and discussion commenced on the new Metis Settlement legislation to determine the impact this legislation would have on the mandate and jurisdiction of the Director of Surveys.

9.2 Monitoring Standards

In 1991-92, 379 plans of survey were received for examination prior to registration in the Land Titles Office. During the same period, 442 plans were examined which reduced the backlog of plans to be examined. With the exception of "official plans," wellsite traverses and surveys under Section 43 of the Surveys Act, effective 1 January 1992 there will be no plan examination for surveys prior to registration.

- Field checks were performed on three surveys.
- Alleged discrepancies on 290 plans of survey were investigated and discussed with surveyors. To date, 80 percent of all discrepancies have been resolved by the surveyor.

9.3 Consulting

Advice and direction on complex land survey matters were provided for 75 inquiries. The majority of inquiries come from surveyors and, to a lesser extent, from other agencies.

9.4 Information Access

In 1991-92, 6486 plans of survey were added to the Land Survey Document System (LSDS) and indexed.

An agreement with Land Information Alberta (LIA) is imminent for distributing this information through remote access.

Hard copy information on survey records, township plans, wellsite plans and field notes were distributed through Maps Alberta.

A review of scanning technology was begun in preparation for converting historical survey records to digital form.

A pilot project was initiated to examine the capability and options available through computer graphics in the application of generating future "official plans."

9.5 Administration

The strategic planning process was initiated in the branch as a continuation to planning at the departmental and divisional levels.

Improved efficiency was realized through office automation in the branch with the implementation of electronic mail and time management at the administrative support and management levels.

